

Assessing Existing Infrastructure

Assessment of Key Components

- Source
- Intake or Well
 - Raw water pumping
- Transmission
- Treatment
- Distribution
- Storage
- Pumping Facilities

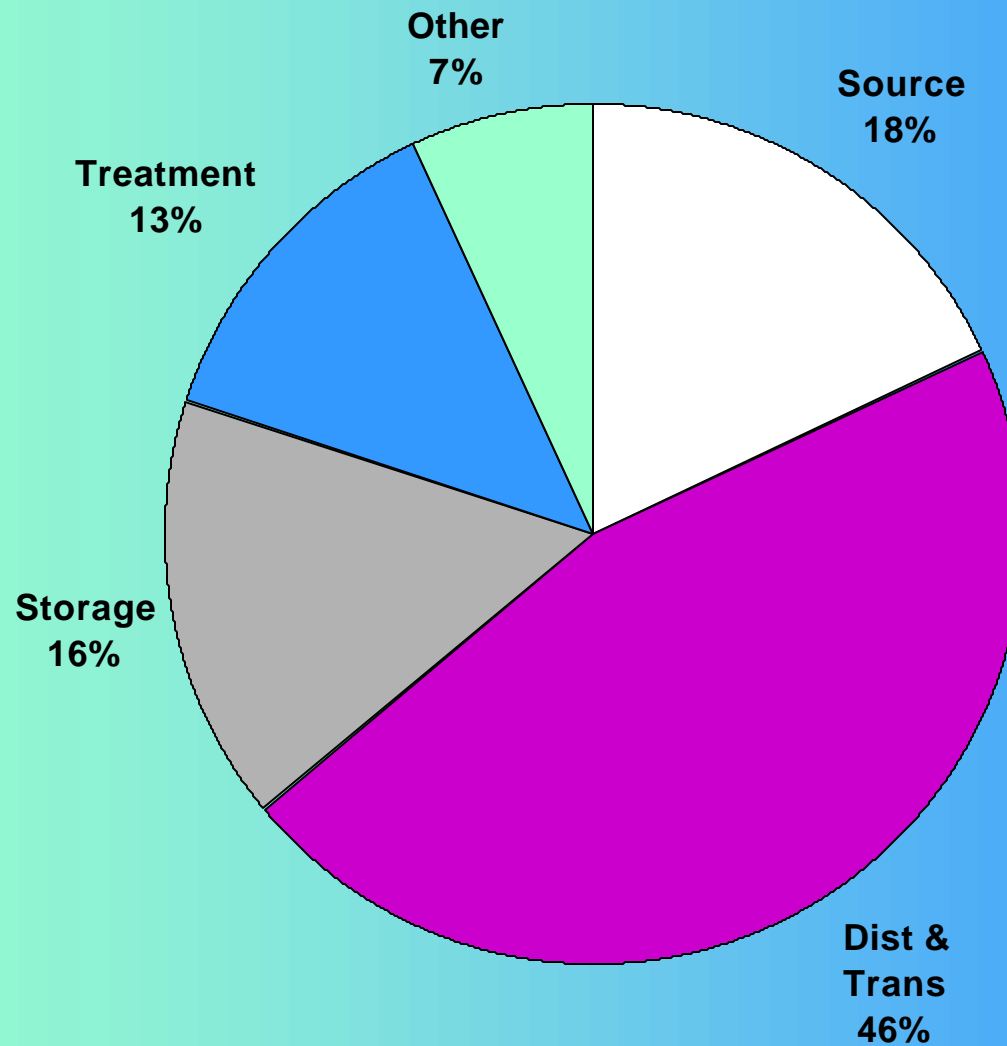


Essential to Assess Total Needs

- Not All Needs Are Obvious
- An Assessment Must Be Made
 - Source
 - Transmission
 - Treatment
 - Distribution
 - Storage
 - Pumping

EPA's Drinking Water Needs Survey

1995 Projects



Assessing Source of Supply



- Quantity
 - Current and projected use
 - Source capacity
- Quality
 - Current quality
 - Trends
 - Source water protection

Ground Water Sources



- Well Construction
- Capacities
 - Wells
 - Pumps
- Sanitary Condition
 - Surface completion
 - Grouting
 - Sanitary seal
- Source Water Protection

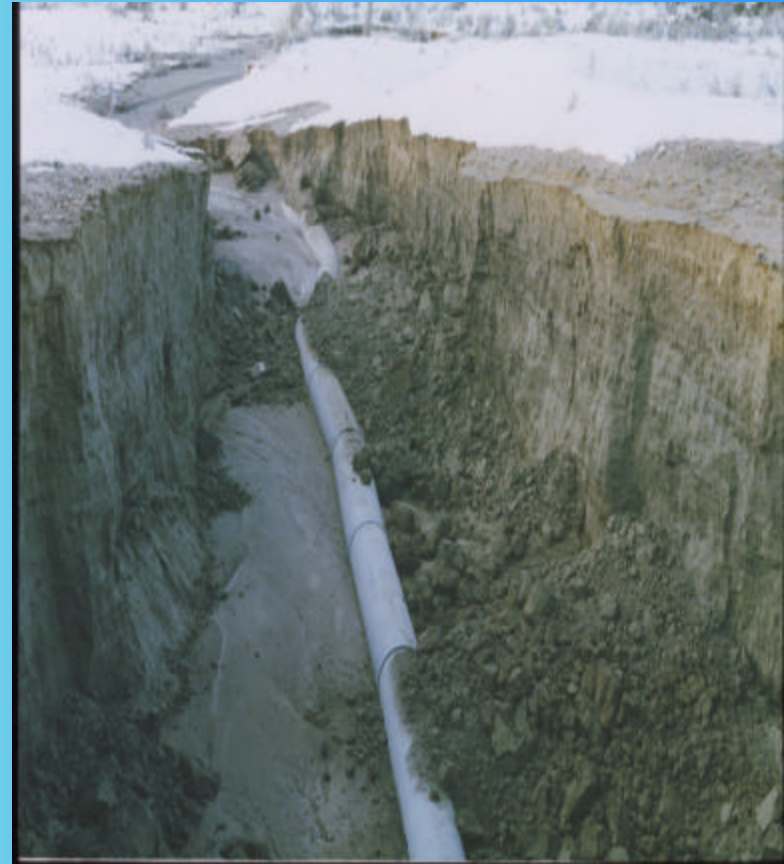
Surface Water Sources

- Source Water Protection
- Intake
 - Condition
 - Problems
- Turbidity



Assessing Transmission

- Size
- Materials
- Capacity
- Condition
- Air/Vacuum Relief
- Peak Daily Flows
- Redundancy



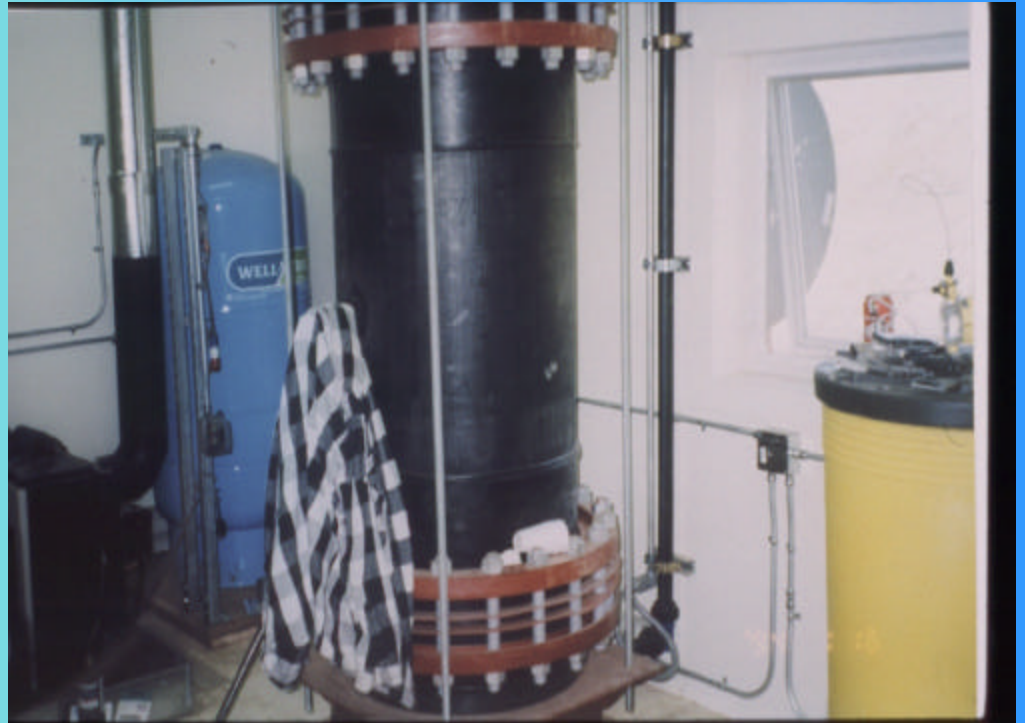
Assessing Existing Treatment

- Objectives
- Design
- Performance
- Age and Condition
- Residuals



Existing Treatment Objectives

- Primary Standards
- Secondary Standards



Existing Treatment Design

- Design Conditions
 - Hydraulic loading
 - Solids loading
 - Chemical feed
 - Peak daily flow
 - Residuals handling
- Future Demands on System



Existing Treatment Performance

- Finished Water Quality
 - Average
 - Excursions
- Process Control
- Performance Limiting Factors
- Cost and Efficiency
- SCADA



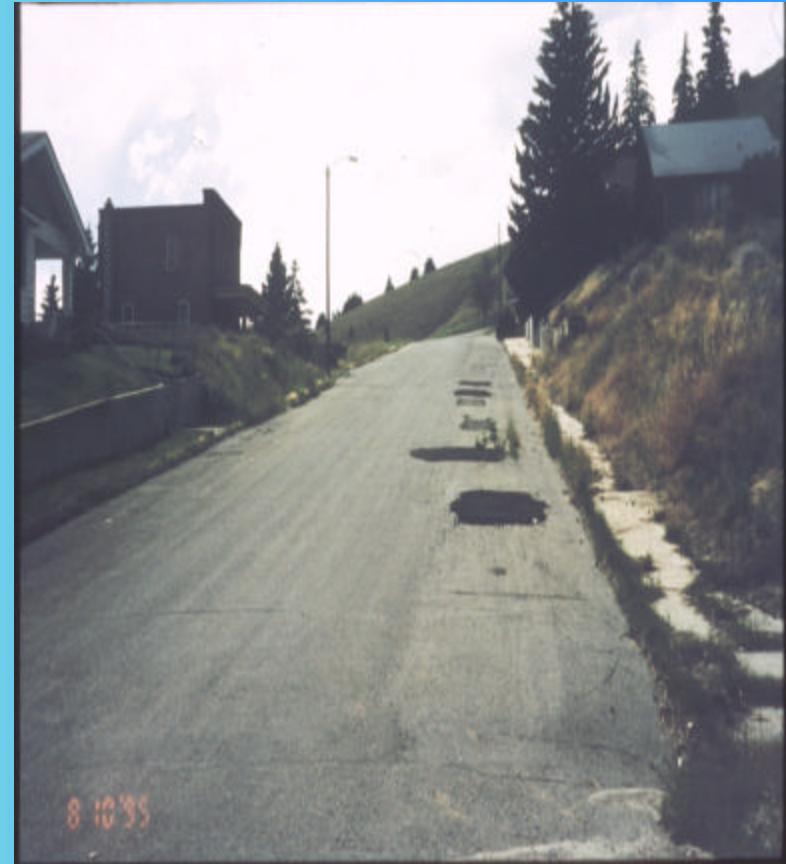
Age and Condition of Treatment

- Structural Components
- Process Equipment
- Electrical Systems
- Control Systems
- Safety
- Redundancy



Assessing the Distribution System

- Age
- Materials
- Installation
- Repair History
- Water Use Records
- Valves
- Hydrants



Assessing the Distribution System (cont.)

- Main Break and Leak Patterns
- Corrosion History
- Environmental Stresses
- Peak Hourly Flow
- Looping



Maintenance Alternatives

- Main Break Repair or Replacement
- Cleaning and Lining
- Leak Detection and Repair

Assessing Storage

- Condition
- Storage Capacity
- CT Provided
- Sanitary Condition
 - Vents
 - Hatches
 - Level measuring devices
 - Overflows



Storage Capacity

- Operational Storage
 - Peak demands vs. supply capacity
- Fire Storage
 - ISO
 - Fire marshall
- Emergency Storage
 - Power outages
 - Natural disasters
 - Pump or supply failures



Storage Capacity (Hydropneumatic)

- Frequency of Pump Cycling
- Auxiliary Power
- Pumping Rate vs. Treatment Capacity



Storage Sanitary Condition

- Vents
- Hatches
- Level Measuring Devices
- Overflows
- Elevation (Pressure)



Pumping Stations

- Age
- Condition
- Design Standards
 - Redundancy
 - Auxiliary power
 - Pressure
 - Peak hourly flow
 - Confined spaces



Assessing Retail Services

- Meters
- Meter Reading Equipment
- Billing and Revenue Collection
- Hardware and Software

The Cost of Inadequate Planning

- Financial Hardship
- Poor or Variable Water Quality
- Regulatory Violations
- Periodic or Chronic Water Shortages
- Loss of Revenue Due to Inaccurate Meters or Leaks

